



Essential Learnings /Alignment with Colorado State Standards-

Standard 2: Students know and understand common properties, forms and changes in matter and energy.

***PYS11:** Describes, measures, and calculates interactions between moving objects in a system
c. Identifies where potential and kinetic energy are at their highest and lowest in a mechanical system such as a roller coaster

PYS12: Explains that energy appears in different forms and can be transferred (moved) to be transformed (changed)
b. Describes different forms of energy: radiant (light/solar), thermal(molecular motion), chemical (chemical bonds between atoms), mechanical (potential and kinetic), electrical (motion of electrical charges), and nuclear (fission and fusion)
c. explains that energy can be transferred (moved) from one object to another and transformed (changed) from one form to another
d. Identifies the energy transformations that occur in a specific system (for example: light can be changed into thermal energy, electrical energy can be turned into light energy)
e. Explains that even though energy can be transferred and transformed, it cannot be created or destroyed

Standard 5:

Students understand that the nature of science involves a particular way of building knowledge and making meaning of the natural world.

PYS16: Explains that a controlled experiment must have comparable results when repeated
a. Identifies a controlled factor (variable) in a scientific investigation
b. Predicts that when repeating a controlled experiment, it should lead to comparable results
c. Recognizes that if conditions are kept the same, evidence collected through repeated experiments cannot be accurately compared to previous experimental results

PYS17: Creates and uses physical and conceptual models for explanation and prediction
a. Recognizes and/or describes that models can be used to obtain information about scientific processes and/or objects that may be difficult to study
b. Gives examples of models that are used to understand scientific processes or concepts
• When scale or size is difficult to replicate and makes observations difficult
• To make an abstract concept more understandable (Newton's Laws)

Technology Integration Expectations: (Technology Integration and Information Literacy)

Students will use technology:

- responsibly for communication and transfer of ideas
- to gather, organize, analyze and communicate about data
- to collaborate with others to identify information problems and seek their solutions

*PYS stands for Physical Science